



## City of Santa Barbara's Pretreatment Program

### Best Management Practices for Boiler Blowdown

#### Water Quality Concerns Related to Boiler Blowdown

Boiler blowdown has the potential to carry pollutants to the sanitary sewer, including dissolved or suspended minerals, heavy metals (iron, copper) corrosion inhibitors, oil, salt, and algaecides. These pollutants can disrupt the wastewater treatment process, or pass through the treatment process and end up in local waterways.

#### Enforcement of Boiler Blowdown BMPs

The City of Santa Barbara Municipal Code (SBMC) Title 16.04.120 states that the City may develop Best Management Practices<sup>1</sup> that serve as an enforceable control mechanism for prohibited wastes. Any discharge to the wastewater treatment plant cannot contain concentrations of pollutants of concern that are greater than the local limits<sup>2</sup> in the City of Santa Barbara's Municipal Code. The BMPs listed here are required actions that will be assessed when a City of Santa Barbara inspector visits your facility.

In addition to protecting the environment, the BMPs listed here can help reduce water, chemical and energy use, and save you money. By following these BMPs, you will be able to pass inspections by City of Santa Barbara Pretreatment Staff.

#### Inspections by City of Santa Barbara

City of Santa Barbara may inspect any Industrial or Commercial User's facility to ensure compliance with City's Municipal Code and to prevent sewer problems (SBMC 16.08.150). The City has the right at any time to collect a sample of water being discharged from the facility to check for compliance with the local limits found in The City of Santa Barbara's Municipal Code.

#### Questions?

If you have any questions, please contact the City of Santa Barbara's Pretreatment Program by calling 805-568-1093 or [Mthompson@SantaBarbaraCA.gov](mailto:Mthompson@SantaBarbaraCA.gov)

<sup>1</sup> Best Management Practices are the schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to implement the prohibitions listed in 40 CFR Part 403.5(a)(1) and (b). BMPs include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw materials storage.

<sup>2</sup> Local limits are technically based, defensible numerical limits imposed on industrial users by the City. The local limits are set for pollutants that can interfere with the treatment process or pass through the treatment process without being removed. Local limits can be found in the City of Santa Barbara's Municipal Code online at: <https://www.santabarbaraca.gov>

## CITY OF SANTA BARBARA PRETREATMENT PROGRAM

### Information Regarding Boiler Blowdown

Even with the best pretreatment programs, boiler feedwater often contains some degree of impurities, such as suspended and dissolved solids. These impurities can remain and accumulate inside the boiler as operation continues. The increasing concentration of dissolved solids can lead to carryover of boiler water into the steam, causing damage to piping and other equipment. The increasing concentration of suspended solids can form sludge, which reduces boiler efficiency and heat transfer capability.

To avoid these problems, water must be periodically discharged or “blown down” from the boiler to control concentrations of suspended and dissolved solids in the boiler. This blowdown water can contain dissolved or suspended minerals, heavy metals (iron, copper) corrosion inhibitors, chloride, and oil. Reducing the potential impact of these pollutants can be accomplished by reducing both the volume and hazardous make-up of blowdown water by implementing the practices listed below.

**The Best Management Practices (BMPs) listed below can help minimize the discharge of pollutants to the wastewater system. They can also help conserve water, reduce impacts to the wastewater treatment plant and save you money.**

### The following Best Management Practices are REQUIRED:

**These BMPs will be enforced through regular inspections by the City of Santa Barbara’s Pretreatment Staff.**

- The City of Santa Barbara prohibits the discharge of any sewage, industrial or other polluted waters into any storm drain or natural outlet or channel.
- You must prevent accidental discharge of prohibited materials, such as chemicals found in boiler blowdown, to the storm or sanitary sewer systems.
- Any discharge to the sanitary sewer system cannot contain concentrations of pollutants of concern that are greater than the local limit. The local limits for chemicals commonly associated with boiler blowdown are listed at the top of the following page. View the full list of local limits for pollutants of concern in the City of Santa Barbara Municipal Code Title 16.04.120; “Local Limitations on Wastewater Strength.”

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The following Best Management Practices are **REQUIRED**:

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All discharges to the City of Santa Barbara collection system must meet the Constituent Local Limit Concentrations listed in the table below.

Constituent	Units	Daily Maximum
Oil & Grease, polar	mg/L	100
Oil & Grease, non-polar	mg/L	100
pH	standard units	6.0 – 10.0 at all times
Arsenic, total	mg/L	0.27
Cadmium, total	mg/L	0.09
Chromium, total	mg/L	2.64
Copper, total	mg/L	1.1
Lead, total	mg/L	2.0
Mercury, total	mg/L	0.032
Nickel, total	mg/L	1.86
Silver, total	mg/L	0.59
Zinc, total	mg/L	7.11
Selenium, total	mg/L	9.37
Cyanide, total	mg/L	0.97
Chlorinated phenolics	mg/L	0.189
Phenolics	mg/L	42.47
Endosulfan	µg/L	1.3
Endrin	µg/L	0.6
Hexachlorocyclohexane (HCH)	µg/L	0.7
Polychlorinated biphenyls (PCBs)	µg/L	0.222

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**The following Best Management Practices are RECOMMENDED:**

Minimize the volume of blowdown water by optimizing the frequency of boiler cleaning. One or a combination of the following practices are worth considering:

- Conduct frequent chemical analyses to define normal cycle chemistry. This will facilitate identifying when chemistry is abnormal and, therefore, when cleaning should take place.
  - Consider using such techniques as ultrasonic imaging, thermocouples, removable test strips and fiberoptic inspections to determine the locations and/or type of deposits.
  - Consider sampling the boiler tubes annually to track scale build-up.
- Control the composition of boiler feed water through an elevated oxygen treatment process, as opposed to using additives such as hydrazine and morpholine. This treatment process results in a more unified, finer-grained magnetite layer that requires less frequent cleaning.
  - Inspect for and replace seals on the steam cycle appurtenances. This will potentially reduce the amount of oxygen that enters the system and, in turn, the frequency of boiler cleanings.
  - Establish a boiler cleaning frequency according to the build-up of scale rather than following a predetermined schedule. This may reduce unnecessary cleanings.
  - Use in-line cleaning, which entails cleaning the boiler with a sodium polyacrylate injection while it continues to operate. This practice takes less time, uses less hazardous chemicals and yields a waste stream that is easier to handle. However, the associated risk is potential contamination of the steam turbine, and fewer deposits can be removed with this practice.